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Marketing system of some fish species in the north-eastern region of Bangladesh: An empirical study

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Abstract

In Sylhet district, several markets and super shops are developed to continue fish related business. Therefore, the study was undertaken to discern about the inclusive market status by employing PRP tools for a period of six months from June-November 2015. The study revealed that in supply chain about 5% consumers received fish and fishery products from fish farmers directly and rest 95% fishes reached to the consumer levels through intermediaries. About 55% fish species were found as local origin and 45% came from different parts of the country. The gross margin of *paiker*, wholesaler and retailer was 800, 400, 1100 taka/quintal whereas net margin was 600, 320 and 960 taka/quintal, respectively. It was found that 45% consumer not prefers to take fish in fillet form and rest 55% accepted fish fillet for consumption. Major constraints of the study areas were poor drainage, transportation, icing facilities, unhygienic environment. Not only GO but also NGO should take recommended measures to overcome the existing problems of fish market in Sylhet district.

Keywords: Sylhet district, fish markets, marketing channels, price, intermediaries, gross margin, net margin, constraints, measures

1. Introduction

The fishes are the most diverse and abundant vertebrate in the world and about 40% of them live in freshwater (Dudgeon *et al*, 2008; Ghorbani *et al*, 2013) ^[1-2]. In case of Bangladesh, the contribution of freshwater fish species is about 79% (Hussain, 2010) ^[3] due to its huge freshwater resources in terms of ponds, rivers, *beels*, haor, baor, floodplain, reservoirs etc. Therefore, fish have been considered as a central part of life of the people of Bangladesh from time immemorial. Fisheries sector of Bangladesh has shown outstanding growth in recent years and ranks fourth in the world in terms of total fish production and contributes around 3.69% of the country's Gross Domestic Products (GDP) and 22.60% in agricultural GDP (DoF, 2015) ^[4]. With fourth position in fisheries, the country has high potentials in the sector for rural development, domestic nutritional security, employment generation, gender mainstreaming as well as export earnings (Rahman *et al*, 2016) ^[5]. This sector provides full-time employment to an estimation of 1.2 million fishermen and an estimated 10 million households or about 64% of all households are partly dependent on fishing, e.g. part time fishing for family subsistence in flooded areas. Another 10% poor and middle class people are engaged in part-time fishing, aquaculture, fish seed production and collection of shrimp and prawn seed, fish handling, processing and marketing of fish and fishery products, net making, input supply etc. (DoF, 2015) ^[4].

Sylhet District is one of the largest states which lies on the banks of Surma River, is a major river of Bangladesh, part of the Surma-Meghna River System. Besides Surma, other important rivers are Kushiyara, Manu etc. Therefore, the vast water resources of the state have cosmic potential of aquatic bio-resources and offers considerable scope of inland fisheries development and aquaculture. Fishermen of this region are assembling fish both from inland captured fisheries and aquaculture which then trading to ultimate consumers through a system called fish marketing channel (Akter *et al*, 2014; Islam *et al*, 2015) ^[6-7]. In Bangladesh, the fish and fishery products marketed through different channels and outlets. The fish market structure varies from area to area, but in general terms it can be four types viz. primary, secondary, higher secondary and final consuming market (Amin *et al*, 2012) ^[8].

Numerous constraints are observed in these fish marketing and trade, some of which are sparsely mentioned elsewhere at a very rudimentary level. Available information on domestic trades of fisheries products suggests that the entire supply chain from the fishing grounds to retail market is traditional and subject to loss of value in terms of spoilage and weight loss due to improper handling and preservation techniques. The most serious marketing difficulties seem to occur in remote communities with lack of transportation, ice and poor road facilities and where the farmers are in particularly weak position in relation to intermediaries (Rahman, 1997; Rahman *et al*, 2009) [9-10]. The intermediaries in the fisheries sector have established a new marketing chain, based on the extreme exploitation of the fish farming communities, by setting up an artificial pricing chain. In addition, after harvesting all consignment of fish species are subjected to trade to intermediaries named *beparis*, *aratdars*, or retailers. As farmers have poor knowledge on pricing policy, so they would not receive sufficient remuneration according to their industry. Thus, the socio-demographic conditions of fisher folk community are always leftovers similar position year after year. Without developing fish marketing system, fisheries sector and fishermen lifestyle will not be developed up to a satisfactory level (Islam *et al*, 2015) [7]. In general, it is important to know the existing fish marketing system and some recommendations for the improvement of efficient market system in north-eastern region of Bangladesh. In view of the above information's, the objectives of present study was designed to identify major fish distribution channels, common beneficiaries of fish markets, explore existing marketing infrastructure and conditions of fish handling and means of transportation, identify important species for export and domestic consumption, constraints to marketing and trade of fish and provide recommendations based on the results and findings.

2. Methodology

2.1 Study area and study period

The present study was conducted in Sylhet District of Bangladesh, situated in between 24°36' and 25°11'N latitudes and 91°38' and 92°30'E longitudes. Relevant information's for the present study were collected for a period of six months from June 2015 to November 2015.

2.2 Data collection

Purposive and simple random sampling techniques were used to collect necessary data. Five markets were selected being the major fish markets in the study area. Structured interview schedules were used to collect information from the major fish landing centers, wholesale and retail fish markets through key informant surveys and focused group discussion with

officials and members of fish trader associations/cooperative societies. Interviews were conducted at the market during marketing time. Retailers took part in fish selling activities as a result there was a scope to observe the marketing activities. Cross-check interviews were also conducted with key informants such as DoF, BFDC etc.

2.3 Sampling size

A total of 47 fish traders (15 from each market and 1 from each super shop) and 60 consumers (12 from each market) were selected randomly for interview.

2.4 Data analysis

The following equations have been used to calculate gross and net margin of paiker, wholesaler and retailer of fish market-

$$\text{Gross margin} = \frac{\text{Sale price} - \text{Purchase price}}{\text{Purchase price}}$$

$$\text{Net margin} = \frac{\text{Gross margin} - \text{Marketing cost}}{\text{Marketing cost}}$$

2.5 Data presentations

The collected data are analyzed in SPSS (16.00) (one way ANOVA) and MS Excel 2010. The data were then represented in textual, tabular and graphical form for easy understanding of present findings.

3. Results and Discussion

3.1 Present scenario of fish markets

Table 1 represents general information of five different fish markets (Kaji Bazar, Lal Bazar, Amborkhana Bazar, Shwapno super shop and Taradin super shop) of Sylhet division. Among the different markets, Kaji Bazar fish market is a wholesaler market which open at 6am and close at 10pm whereas other markets like Lal Bazar, Amborkhana Bazar, Shwapno super shop and Taradin super shop start marketing activities mainly at 9am and close at 10pm. There are about 70 retailers were found in Kaji Bazar, 85 retailers in Lal Bazar and 75 in Amborkhana Bazaar. Good communications system was observed for all fish markets. Drainage system was cemented which was more or less moderate. Electricity facilities were found available in all markets. Ice and water facility were also good in district fish markets. But, overall sanitation and drainage system were found unsatisfactory level which reported as detrimental health effects on fish sellers and fish buyers. The present findings were supported by Kumar *et al*, (2008) [11] who reported that infrastructure facilities drainage system and sanitation conditions of fish markets were found grossly inadequate and poorly maintained.

Table 1: General information about the studied fish markets in Sylhet

Market Characteristics	Kaji Bazar	Lal Bazar	Amborkhana Bazar	Shwapno Super Shop	Taradin Super Shop
Market type	Bazar	Bazar	Bazar	Super Shop	Super Shop
Market time	6am-10pm	11am-10pm	9am-10pm	9am-11pm	9am-11pm
No. of retail shop	70	85	75	1	1
Communication system	Good	Good	Good	Good	Good
Platform	Absent or steel or iron made	Cemented	Cemented	Steel made	Steel made
Roof (shade)	Absent	Tin shed	Tin shed	Building	Building
Drainage	Absent	Present but moderate	Present but moderate	Present	Present
Electricity supply	Present	Present	Present	Present	Present
Ice facility	Present	Present	Present	Present	Present
Sanitation	Very Poor	Poor	Poor	Good	Good
Water supply	Available	Available	Available	Available	Available

3.2 Marketing Channels

Marketing channels/ value chains are the alternative routes of product flows from producers to consumers (Kohls and Uhl, 2005) [12]. Value chain may be long or short for a particular commodity depending on the qualities of products, size and nature of consumers and producers and the prevailing social and physical environment. A total of 5 marketing channels were found in the flow of indigenous small fish in Sylhet city.

- Channel 1: Fishermen/Producer- Consumer
- Channel 2: Fishermen/Producer- Retailer-Consumer
- Channel 3: Fishermen/Producer- Wholesaler- Retailer-Consumer
- Channel 4: Fishermen/Producer- Aratdar (Commission agent) - Retailer- Consumer
- Channel 5: Fishermen/Producer-Aratdar (Commission agent) -Wholesaler- Retailer-Consumer

Figure 1 expressed the marketing channels of fish from fishermen or fish processors to ultimate consumers via number of intermediaries. The figure revealed that marketing system of fish and fishery products was operated through a set of intermediaries performing useful commercial functions in a chain formation from producers to the final consumers. From the figure, it was clear observation that only 5% consumers received fish and fishery related products from fish producers/capturers directly and rest 95% fishes reached to the consumer levels through different intermediaries (*beparis*, *aratdars*, wholesalers and retailers etc.). Similar results also observed from the study of Rokeya *et al*, (1997) [13] who revealed that fishermen hardly get chance to communicate directly with the ultimate consumers.

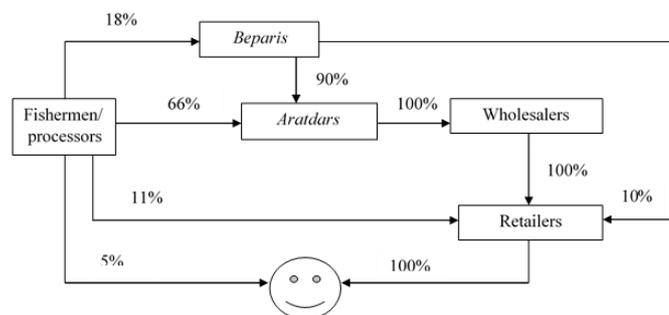


Fig 1: Marketing channels of fish in the study area

3.3 Prices of some farm fish

The price of fish varies with the types of species sizes, freshness, market demands and seasons. The price of Pangus was ranged from 100-150tk/kg, Tilapia 110-150tk/kg), Rui 200-360tk/kg, Catla 200-350tk/kg, Carp 200-350tk/kg and price of prawn was 450-800tk/kg (Table 2). From the survey results, it was observed that Pangus and Tilapia received lower market prices due to its off-flavor (King and Dew, 2003; Redel *et al*, 2013) [14-15].

Figures 2, 3 and 4 represented season to season variation in prices of fish species of Kaji Bazar, Lal Bazar and Amborkhana Bazar, respectively. From the results, it was found that prices of fishes are higher in June to July when the fish are in short supply. On the contrary, prices remain lower during October to November which seemed to be related with the increased availability of both captured and cultured fishes during this period. Traders reported that price varies according to daily demand and there were generally seasonal variations in price with the highest in summer (March to May); the lowest in pre-winter and winter (November to

January) and during fish harvesting season (Figures 2, 3 and 4). In general, price variation of fish species was found correlated with the availability of species, long fish supply chain, size of fish and most commonly consumer preferences. Similar seasonal variations in fish prices (highest in summer and the lowest in winter) reported by Quddus (1991) [16], Siddique (2001) [17] and Rahman (2003) [18]. However, Srivastava (1985) [19] found price variations among the fish species according to their availability, size and consumer preferences.

Table 2: Prices (Tk/ kg) of available farm fish in different markets of Sylhet division

Fish species	Kaji Bazar	Lal Bazar	Amborkhana Bazar	Shwapno super shop	Taradin super shop
Pangus	100±10	140±10	150±10	140±00	135±00
Rui	200±10	250±10	250±10	250±00	360±00
Tilapia	110±5	130±10	150±5	145±00	140±00
Catla	250±10	200±5	250±10	350±00	300±00
Carp	200±10	200±5	250±5	300±00	350±00
Prawn	500±10	550±15	600±20	450±00	490±00

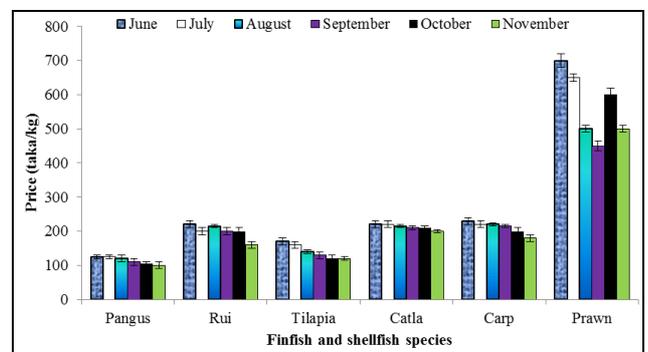


Fig 2: Prices of fish in Kaji Bazar during June to November 2015

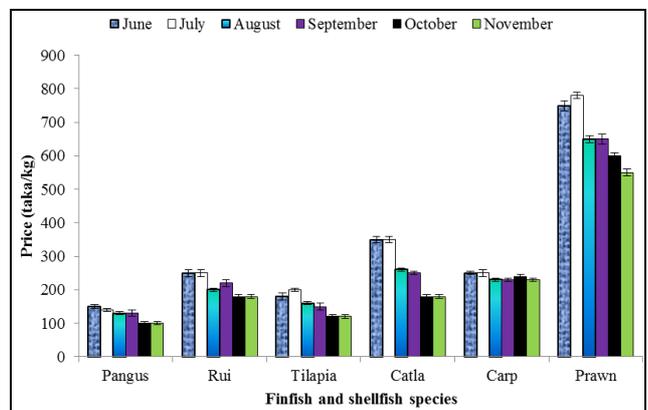


Fig 3: Prices of fish in Lal Bazar during June to November 2015

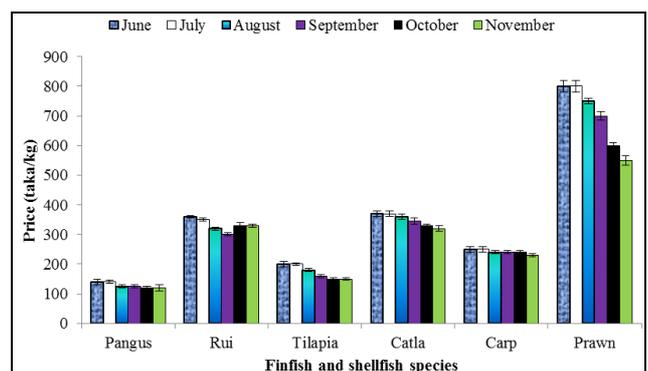


Fig 4: Prices of fish in Amborkhana Bazar during June to November 2015

3.4 Sources of fish species

The present study revealed that most of the fishes (55% come from the local areas (Sunamgong, Hobigong, Chatok, Sobhangong, Golapgong, Tanguarhaor, Khatiabeel, Moulvibazar, Namabazar, Horipur, Badhaghat around Syhlet division etc.) and only 45% come from outside mainly from Jessor, Khulna, Bagerhat, Satkhira, Barisal, Rajshahi, Mymensing, Chandpur, Chitagong. Fish was exported in Dhaka and different district of Syhlet, Rajshahi, Chittagong from Sylhet divisional market.

3.5 Preservation and transportation

To preserved imported fish, most of Araddar used ice which was supplied from ice factory. To preserved fish around 300-600gm ice have been used per kg fish. But it is varying with fish types from fresh water and marine water sources. Rahman *et al.*, (2009) ^[10] reported that marketing

organizations should have fish freezing and storage facilities as well as ice plants to ensure effective fish marketing systems. Different types of vehicles were found used for fish transportation; these were both mechanized and non-mechanized vehicles.

3.6 Net marketing margin

Marketing margin was found differences between the price received by the producers (Farm-get price) and price paid by the consumers (Retail price). Net marketing margins include marketing cost and profit or loss incurred by all intermediaries. The wholesalers and sold to the retailer earned a gross margin of Tk 400 per quintal. After deducting, marketing cost of Tk 80 per quintal and net margin stood at Tk 320. Then the retailer sold those to the consumer earned a gross margin 1100 Tk and after deducting marketing cost was 140 Tk and net margin 960 Tk in Sylhet fish market.

Table 3: Marketing margin of intermediaries (Tk per quintal of fishes) in Sylhet

Intermediary	Purchase price (B)	Sell price (A)	Gross Margin C=(A-B)	Marketing cost (D)	Net margin (E)=(C-D)
Paiker	8500	9300	800	200	600
Wholesaler	9300	9700	400	80	320
Retailer	9700	10800	1100	140	960

1quintal = 100 kg

3.7 Marketing cost

The cost of marketing of a product refers to the expenses incurred by the different sets of intermediaries in the process of performing various marketing functions to reach the product from producers to the ultimate users. Different components of fish marketing costs were identified during the study such as transportation cost, cost of wastages, cost of storage and icing, and miscellaneous expenditures. According to Mia (1996) ^[20], the average marketing cost per quintal of fish incurred by these intermediaries in Muktagachha, Fulpur and Mymensingh were 555.14, 209.91, and 660.53 Tk/kg, respectively. Ara *et al.*, (2010) ^[21] reported that the average marketing margin per quintal of fish for fishermen was 305.56 taka and for *aratder*, *paiker* and retailer were 334.65, 515.80 and 340.40 taka, respectively.

3.8 Status of frozen fillet acceptance in Syhlet division city

Figure 5 represents consumer's opinion towards frozen fish fillet in fish markets of Sylhet city. In Syhlet city, there are some super shops like Shwapno super shop and Taradin super shop sell raw fish as well as fish fillet to the consumer's level. From the result, it was found that 45% consumer not prefer fish fillet and rest 55% accepted fish fillet for consumption. This is due to the food habit of people of Bangladesh, availability of fish fillet. Most of the fish consumers of Bangladesh have a preference to take only fresh and live fish as food. In general, acceptance of frozen fillet by consumers is moderate.

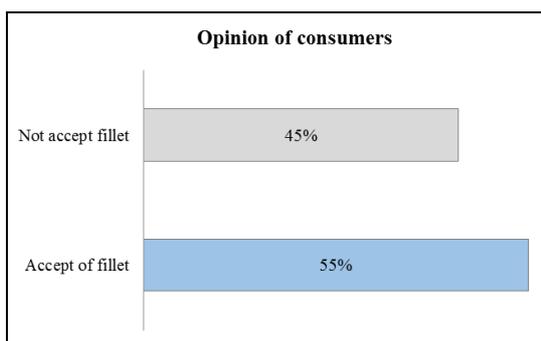


Fig 5: Opinion of consumers towards frozen fish fillet in the market

3.9 Constraints

During survey, following constraints were observed from the study areas-

- ✓ After harvesting, fish passes through a number of channels and intermediaries which consume more time to reach the ultimate consumers;
- ✓ In the study area, transportation facilities are poor in general which preventing fish producers to forward their collecting fish to distant markets;
- ✓ In general, fish are transported by road, trains, bus and boat/launch by using bamboo baskets and plastic containers. During transportation of fish, improper ratio of ice with fish used and delayed in icing, long time exposure of fish to higher temperature and overall rough handling helps to invade more bacteria which causes quality loss of fish;
- ✓ Poor communications and high transport cost, to carry the fish from remote village to the city centre. Generally the fish are transported by traditional boats, motor launches, trucks, buses, trains, rickshaw, vans and taxi without refrigeration which causes spoilage of fish rendering high marketing cost;
- ✓ Price fluctuation of fish from season to season negatively affects the fish producers, fishermen, market, intermediaries and the ultimate consumers;
- ✓ In the fish markets, it is a general scenario that light is placed above the fish containers which accelerate bacteria and other harmful organisms to attack the fish more quickly;
- ✓ Rough handling of fish in markets, poor drainage, inadequate water supply, proper platform and shade, sanitation facilities etc. is probably the most important identifying factors of post-harvest quality losses.

Al the above mentioned factors are crucially responsible for the post-harvest quality losses of finfish and shellfish. The present findings about market constrains were supported by Chowdhury (2004) ^[22] and Rahman *et al.*, (2009) ^[10].

4. Conclusion and recommendation

Marketing of fresh fish in Bangladesh is characterized by involvement of many intermediaries. Involvement of some intermediaries seems to redundant whose presence just adds a

cost to the consumer and a loss to the fisher folk community. When fish moves through value chains, every intermediary adds some extra costs with the purchase price as part of their involvement or profit. As a consequence, price of fish increased to a great extent which affects the fish sellers and ultimate consumers. As the marketing system dominantly maintained by private sectors, so government does not play active role in properly regulating market behavior and market performance in terms of price fixation, physical facilities, shortening channel etc. To improve the present status of markets, following recommendations should be implemented.

- ✓ Shortening of fish market channel by inhabiting the entrance of some intermediaries;
- ✓ Value chain of major carps, pangas, tilapia and prawn should shorten;
- ✓ Price policy should determine by the combination of Go, NGO and private sectors;
- ✓ Proper icing and refrigerated boxes are maintained for fish being sold;
- ✓ More ice-plants, cold-storage, drainage system, electric supply, washing facilities, sufficient auction places, preservation facilities, fish transport, handling facilities etc. should be ensured;
- ✓ Assembling centres with refrigerated storage facilities may be developed so that the perishability of fish is checked, which would enable the assembling centres to make bulk sell/transfer to the next destination. This could reduce post-harvest loss and provide better price for the fishers/farmers;
- ✓ The development of good road and transport networks can reduce superfluous involvement of intermediaries, which could be beneficial for both the fishers/farmers and consumers;
- ✓ Light should be placed to a distance above the fish containers which not able to produce enough heat;
- ✓ Fish should give in fillet form and advertise to the consumer level;
- ✓ Monitoring should be performed by authority to ensure fish quality needs to be strengthened;
- ✓ It is also the responsibility of the government to see that consignment can reach the destination without requiring to pay unnecessary tolls and subscriptions;

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